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October 15, 2001

Sierra Club Comments RE: Draft Rule to Control Mercury Emissions AM 27-01

Submitted on behalf of Eric Uram for the Sierra Club Midwest Office; Caryl Terrell for the Sierra Club, John Muir Chapter

The Sierra Club has long invested time and effort into preventing pollution and ensuring the safety and welfare of all residents. A common threat to Wisconsin residents and our economy is mercury pollution - a risk to the fish-eating public and wildlife, as well as the health and welfare of Wisconsin's vacation resorts and tourism industry.

Air management in the state of Wisconsin regulates mercury emissions in three ways;

- NR 405, the prevention of significant deterioration,
- NR 445, Wisconsin's Hazardous Air Pollutant Control Rule, and
- NR 446 National Emission Standard for Hazardous Air Pollutants (NESHAP)

All of these rules focus on only one route of exposure, inhalation. None of these programs explores the indirect health exposure route of bioaccumulation and its effects – leaving Wisconsin residents and visitors, human and other, unprotected from mercury exposure through its build up in the food chain.

Mercury pollution (use and release from man-made sources) has been addressed from most every known major controllable source – including batteries, paints and agricultural chemicals in addition to combustion releases from municipal and medical waste incinerators. That is, all except one. Current assessments indicate we can reduce mercury pollution from this remaining source by 90% in the next 10 years with currently available technology. This will place an additional cost of less than $20 a month to the average Wisconsin household while forcing retirement of old, polluting technology and introduction of newer more efficient applications. This last source of unregulated mercury pollution – coal-fired power plants – during 1999 alone accounted for over 2264 pounds of mercury pollution, over 42% of the total, dumped into Wisconsin's air.

In order to keep this pollution from emerging as an even greater health threat to the fish-eating public, advisories have been placed on about 100,000 lakes in the Great Lakes region and for all lakes and streams in fourteen of the United States. Currently, *all* of Wisconsin's over 15,000 lakes and ____ miles of streams are under advisory for elevated mercury levels in fish. Pregnant women, nursing mothers, women of childbearing age and children under 15 should limit eating fish caught anywhere in the state. In 92 waters in Wisconsin, including flowages, these same individuals should not eat the fish caught there in any amount.

Fish advisories are, at best, a prophylactic method of protecting the public's health. Unfortunately, this attempt has failed miserably. In the most recent analysis, less than half of the women surveyed knew of the fish advisories and only about one-in-five low-income persons surveyed knew of them. Yet, women of childbearing years are the most sensitive of populations to mercury's threat and low-income anglers are more likely to rely on fish caught locally to supplement their food dollars.

Wisconsin has the unique ability through this rule-making process to address all sources of mercury pollution, not just from coal-fired power plants but all remaining sources of

mercury pollution. This allows for a comprehensive approach to getting the greatest reductions of this persistent, bio-accumulative, highly toxic pollutant possible.

We not only have the ability to reduce the mercury from all sources in Wisconsin, we have the responsibility to reduce this pollution as well. There is nothing in our state or federal Constitutions that give the inherent right to anyone to pollute our air and water. There is no reason we should be allowing mercury pollution to continue in light of the scientific proof we have of the growing health implications. There is no economic reason we should not move forward and control this source of pollution. Therefore, there is no reason the Natural Resources Board should not approve a rule that aggressively reduces mercury pollution in an expeditious manner.

Since early physicians identified the "Mad Hatter" – hat-makers affected by mercury used in the preservation of leather and felt in hats – studies have proven that at increasingly smaller doses, mercury affects a person for life. Now it is understood that significant loss of IQ can occur when a child is exposed to minute amounts of mercury – even if that exposure happens before birth, through their mother's blood.

In June 2001, the National Academy of Sciences reviewed EPA's methodology for setting the reference dose (RfD) of methyl mercury (MeHg) a person can be exposed to without causing adverse effects. The NAS supported the RfD EPA derived stating, "On the basis of the body of evidence from human and animal studies, the committee concludes that neurodevelopmental deficits are the most sensitive, well-documented effects and currently the most appropriate derivation of the RfD… On the basis of its evaluation, the committee's consensus is that the value of EPA's current RfD for MeHg, 0.1 μg/kg per day, is a scientifically justifiable level for the protection of human health."

Additional studies presented to the NAS show other health concerns are warranted. Some of these studies have linked mercury exposure to adverse effects on the developing

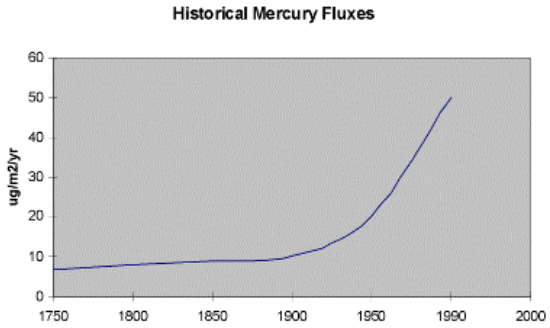
and adult cardio-vascular system at or below those levels associated with neurodevelopmental effects. Adverse immune and reproductive systems influences have been seen in animal studies that have implications for human health effects.

Following the NAS review, the Center for Disease Control estimated 10% of all children were threatened. In an effort to quantify the body burden of persistent toxic substances, the CDC took random blood samples. They found that 1-in-10 women of childbearing age have mercury in their bodies approaching levels proven to harm developing children. If the numbers from the last census are utilized, 10% of all children born annually, or 395,941 nationally and 6,943 in Wisconsin, approach toxic levels of effect.

Studies have linked high mercury levels to reproductive problems in loons, eagles, rainbow trout, and walleye. Wisconsin's own report on Mercury in Wisconsin's Environment states, "Mink and otter from northern lakes and river systems draining into Lake Superior have consistently higher mercury burdens than animals from southern lakes and river systems draining into Lake Michigan, Green Bay and the Mississippi River." Going further DNR said "…animals in contaminated areas may be experiencing toxic effects, and that populations in highly contaminated ecosystems may be reduced or even extirpated… Similar to mammals, piscivorous birds are at risk for elevated mercury exposure in Wisconsin." DNR also reached conclusions on aquatic effects, "Although water column concentrations of mercury are not at levels directly toxic to fish, accumulation of mercury through the food chain may result in reduced reproductive health or other sub-lethal effects." (PUBL-WR-452-96)

Loon chicks, whose parents nest in high-mercury lakes, are born with elevated mercury levels and fed high levels in their diet. Studies show these chicks are less likely to grow to adulthood; some just wander away from their nests. In mercury-polluted waters, walleye and trout have failed to spawn.

According to the Department of Energy, sediment and soils profiles demonstrate that humans have increased the amount of background mercury in the environment by over five-fold since the Industrial Revolution, most notably in the last century.



Just as the water we have on this planet is the same that fell on dinosaurs and medieval knights, mercury in our lakes as likely came from a coal-burning power plant in Milwaukee in 1890 as one in Eau Claire yesterday.

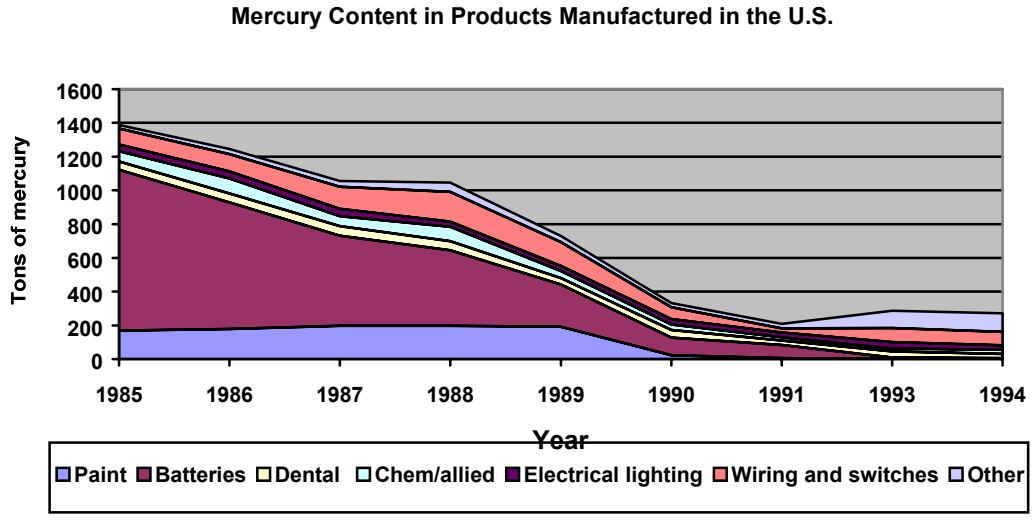
The more mercury we allow to be released – the longer it will take for recovery. This burden in our air, land and water re-emits itself until buried through natural processes. In order to ensure our fish become safe for everyone and everything to eat once again, we need to stop as much human-caused mercury pollution as possible so we can achieve natural levels once again.

"Of the estimated 253 tons per year of mercury emissions from anthropogenic sources in the United States, the overwhelming majority (216 tons/year) is from combustion sources. Because of recent regulations for medical waste incinerators and municipal waste incinerators and reduction of mercury in consumer products, coal combustion will become the only large source of anthropogenic mercury emissions in the United States." (Energy and Environmental Resource Center at University of North Dakota – Grand Forks. http://www1.eerc.und.nodak.edu/biennial/TableofContents.htm)

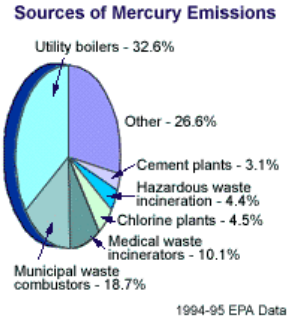
"Downward trends in calculations of mercury in industrial use indicate many have all but eliminated their sources of mercury use and release. This leaves few remaining

controllable sources, other than through combustion, and none as large." (USGS Circular 1197, The Materials Flow of Mercury in the Economies of the United States and the World, June 14, 2000)

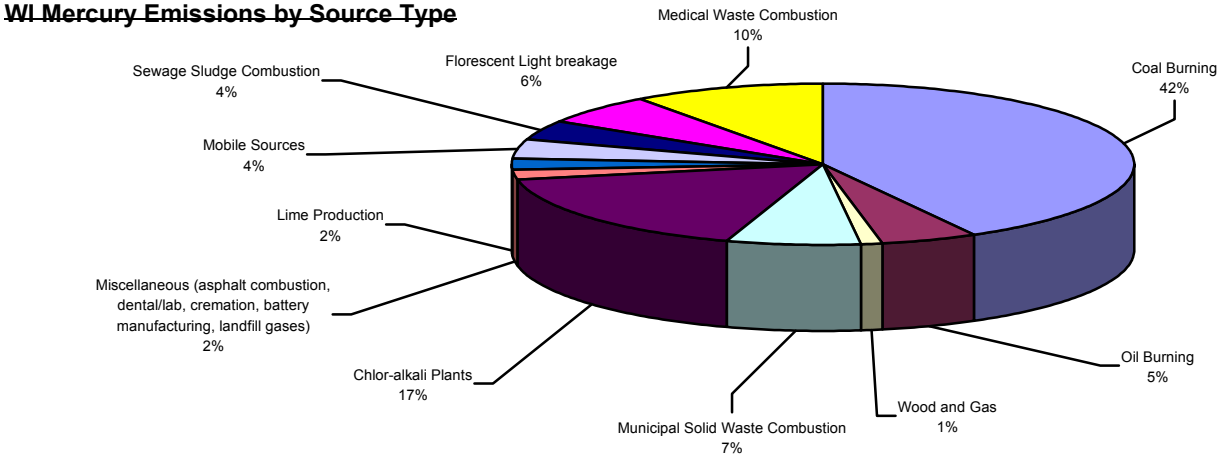
Product	1985	1986	1987	1988	1989	1990	1991	1993	1994
Paint	169	179	198	197	192	22	6	0	0
Batteries	952	750	533	448	250	106	78	10	6
Dental equipment/supplies	50	52	56	53	39	44	27	35	24
Other Chem/allied	61	90	59	86	40	33	18	18	25
Electrical lighting	40	41	45	31	31	33	29	38	27
Wiring devices and switches	95	103	131	176	141	70	25	83	79
Other	20	31	34	55	35	25	26	103	110
Total	1387	1246	1056	1046	728	333	209	287	271



Nationally, emissions from combustion sources account for the vast majority of mercury pollution. EPA has stated, "Medical and municipal waste incinerators and coal-fired utility boilers account for greater than 80% of the mercury emitted from point sources." In order to address this, and to improve technology for controlling mercury emissions, EPA has instituted maximum achievable control technologies (MACT) for municipal and medical waste incinerators.



The Wisconsin DNR's own records show that combustion sources make up the vast majority of mercury emissions. (Esposito, K., "The Metal that Slipped Away," Wisconsin Natural Resources. Feb. 1998.)



In the petition to WDNR and the Natural Resources Board, it was requested that the rule achieve a 90% mercury pollution reduction by 2010. The WDNR proposed rule requires utilities to reduce their emissions 90% in 15 years.

It has been demonstrated that currently available technology can be further refined to accomplish the necessary reductions. Tax dollars supplemented with industry funding currently research issues of concern increasing the span of our knowledge. It can be presumed that the Department of Energy's timeline for research is accurate due to the administration's commitment to success.

The Department of Energy's timeline includes funding for the National Energy Technology Laboratory in the DOE Fossil Energy Program to develop cost-cutting mercury control methods for coal-based power systems. Stating "The goal (of this program) is to develop more effective options that will cut mercury emissions 50-70% by 2003 and 90% by 2010 at one-quarter to one-half current costs."

The Sierra Club therefore recommends the rule set as its goal a 90% reduction goal by the year 2010.

Because of lawsuits brought against EPA, a national hazardous air pollutant regulation for coal-fired power plants (including mercury) must be finalized in 2004. By initiating a pro-active agenda, we place polluters on notice they have to clean up their mercury by time-certain. Wisconsin's approach includes all forms of mercury pollution allowing for greater flexibility in achieving success. The federal government can look to Wisconsin for leadership to create regulations that work better for all states – by incorporating a comprehensive approach that will help eliminate cross-boundary pollution. This strategy can be implemented as part of a multiple-pollutant strategy that many, including utility interests, favor. In looking this direction, the rule needs to create adequate record keeping and monitoring provisions. The sooner we move down this path, the better.

The DNR has written reasonability and flexibility in the rule. Utilities can achieve the reductions in many different ways:

1) Placing control devices on existing facilities
2) Changing the fuel used
3) Trading of mercury emissions

Control devices: There are many available add-on control technologies to reduce mercury emissions from coal plants. Because there are many different power plant configurations that burn varying types of coal, the Department of Energy has sponsored research and development of promising control technologies to remove mercury. The goal of all technologies is to reduce mercury emissions 90% by 2010 and reduce the cost of the pollution controls by 50%. ADA Environmental Solutions recently testified that they plan to have a mercury control solution that will cost-effectively accomplish 90% mercury reductions from existing facilities by 2007.

The Northeast States for Coordinated Air Use Management (NESCAUM), a consortium of state environmental agencies recently stated, "If emissions limits and deadlines are established soon, available evidence from more than four decades of environmental regulation in the U.S. strongly indicates that the successful commercialization of cost-effective mercury controls will soon follow." In the DNR proposed rule, they estimate the cost of 90% reductions to be affordable to the average homeowner.

Switching fuel: Wisconsin gets a vast majority of its electricity from coal-burning power plants, most of them being over 20 years old. Of the many new proposed power plants, the majority of options remain plants. The opportunity exists to diversify our energy supply, including cleaner natural gas. Wisconsin Electric plans include closing down an old coal plant and replacing it with a larger gas plant (in Port Washington). Public support for building gas plants exists – in a recent poll by the Wisconsin Policy Research

Institute, Inc. 68% of the residents polled favored newer more efficient and less polluting power plants, with 80% of them favoring new gas plants.

Natural gas prices have come down as supply stabilizes, with projected reserves able to meet demand for home heating as well as for electrical generation and other industrial needs. Last year's price fluctuations are a thing of the past and shouldn't affect future demand.

Other alternatives exist as well. Wind, solar and biomass are proving profitable. Creating electricity by methods that don't burn coal result in elimination of this source of mercury pollution.

Increasing efficiency and reducing demand reduce the amount of mercury that gets emitted by reducing the amount of coal we burn. Industry, businesses and households can all reduce their demand by implementing conservation practices as well as investing in appliances and lights that are more efficient.

Including farmers in a plan to utilize switchgrass will reap more benefits than just reducing mercury. Burning switchgrass gives off less pollution, including mercury, and helps farmers keep the land intact by reducing tillage on erodible areas.

Trading: Pollution trading, in the case of utilities, occurs when a company pays for the reduction of mercury elsewhere (e.g. at an industry or through a thermometer collection program) in order to avoid actual emission reduction from their own facilities. Many other industries (like those that produce batteries and paint) have already phased out the use of mercury in their products. None of these industries that invested in pollution prevention neither required trading to meet their reductions nor can they request credit for their retirement. Coal plants remain the largest source of mercury and the only source that is completely unregulated.

Trading needs to be severely restricted or not allowed. A trading program allows a facility to reduce their pollution on paper but not from their smokestacks. Toxic hotspots, where more mercury pollution can occur, threaten the health of local residents and the environment.

In Wisconsin, we have two major watershed regions – the Superior Uplands (SU) and the Central Lowlands (CL). The SU has unique chemical and geologic aspects that make it more vulnerable to the effects of mercury deposition as demonstrated by the location of the 92 water bodies that health experts advise no fish consumption. The counties in this region play host to greater tourism. Additionally, the per capita population of this region is much lower than the CL region. These aspects could in turn force mercury polluters in the SU region to shoulder the brunt of reductions creating an economic disparity between regions.

Therefore, the Sierra Club recommends that trading only occur between emission units at the same facility. This will eliminate any of the possible negative scenarios discussed.

The rule currently allows for review and reassessment of the goals by the DNR to increase or decrease the timeline and reductions. If the Public Service Commission (PSC), at the urging of utilities, decides that meeting the rule requirements is technologically or economically unachievable or will harm electric reliability, they can grant a variance to the company. These components of the rule assure that business and the environment will be protected to the best of the agency's abilities while allowing timely reductions to occur. Review of either of these determinations must have adequate public review and input. PSC requests for input on this rule allowed neither adequate time nor opportunity for public involvement. Therefore, the Sierra Club recommends that the DNR, not the PSC have ultimate control over granting any variance.

When setting the baseline consider the amount of mercury emitted before control as the baseline. No matter what form the mercury takes, there are metrics to calculate the amount of mercury present when it arrives at a facility. This would allow for much easier bookkeeping and calculation of a baseline.

Recapping our specific recommendations we request that the rule:

- Under NR 446.03(c) – The department must establish a panel including public interest for approving any alternative baseline.
- Under NR 446.05(2) – The department must maintain a high transaction cost to deter introduction of new sources of mercury emissions.
- Under NR 446.06 – The department must maintain an aggressive approach to reductions. It is reasonable to put the ultimate goal at 90% reduction by 2010, with interim goals and review along the way.
- Under NR 446.07/NR 446.08 – The department must establish an independent review panel including public interest to ensure retirement is not equated to continuous emission reduction.
- Under NR 446.09 – The department must establish a mechanism to depreciate all amounts present in the emission registration. Additionally, credits in the registry must be eliminated when any local, state or federal regulation goes into effect that would eliminate those credits in the absence of this rule.
- Under NR 446.10 – The department must establish an independent review panel including public interest to review and approve emission reductions.
- Under NR 446.10 – The department must establish that compliance alternatives involving trades can only be done between emission units at the same facility.
- Under NR 446.10 - The department must establish that variances cannot be granted without adequate public review and approval.